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Sticky prices, fair wages, and the co-movements of unemployment and labor productivity growth

Fabien Tripier*

EconomiX, Université Paris X Nanterre (bât G), 200 Av. de la République, 92001 Nanterre Cedex, France

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Abstract

This paper studies the co-movements of unemployment and labor productivity growth for the U.S. economy. Measures of co-movements in the frequency domain indicate that co-movements between variables differ strongly according to the frequency. First, long-term and business cycle co-movements are larger than short-term co-movements. Second, co-movements are negative in the short and long run, but positive over the business cycle. A New Keynesian model that combines nominal rigidity on the goods market (sticky prices) and real rigidity on the labor market (fair wages) is shown to be quantitatively consistent with the observed co-movements both in the long term and over the business cycle. However, the model fails to explain the short-term co-movements.

JEL classification: C32; E31; E32; J41

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1. Introduction

The long-standing debate still goes in macroeconomics over the relationship between unemployment and labor productivity growth. This paper studies the

*Tel.: +33 1 40 97 78 17; fax: +33 1 40 97 77 84.
E-mail address: tripier@u-paris10.fr.

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importance of periodicity for a better understanding of the relationship. I analyze the behavior of unemployment and labor productivity growth in the short and long run and argue that such an approach is necessary to reconcile the (apparently) contradictory views on this relationship.

The first view is that productivity growth increases unemployment. It has been put forward for the U.S. economy by Blanchard (1989) and Blanchard and Quah (1989) who show that technological shocks first increase unemployment and by Evans (1989) who finds that shocks that instantaneously increase unemployment have a positive long-term effect on output.[1] Gali (1999) demonstrates that this result[2] is still valid for total hours worked (which decrease after a positive technological shock). This evidence supports the New Keynesian's view of fluctuations and contradicts the real business cycle approach of fluctuations which was first proposed by Kydland and Prescott (1982) and Long and Plosser (1983), and later applied to unemployment dynamics by Hansen (1985) among others.

The second view is that productivity growth decreases unemployment. It aimed to account for the 'roaring nineties' experienced by the U.S. economy. Ball and Moffitt (2002) and Staiger et al. (2002) explain the exceptionally low unemployment rate of the 1990s with the equally exceptional productivity gains over the same period. The study of steady state properties in the tradition of Pissarides (2000) and Aghion and Howitt (1994) also provided evidence to support this view. Whereas the relation between growth and unemployment at the steady state is theoretically indeterminate,[3] the empirical studies of Hoon and Phelps (1997), Blanchard and Wolfers (2000), and Vallanti (2004) suggest that permanent growth increase pulls down unemployment.[4]

The first view induces positive co-movements, whereas the second induces negative co-movements. This paper argues that both views are relevant: positive and negative co-movements can coexist, because they are associated with cycles of different periodicities. To make the distinction between the different periodicities, from the short to the long run, the co-movements are studied in the frequency domain by means of spectral analysis. Spectral analysis has become very popular in macroeconomics for describing the dynamic properties of time series as well as the co-movements between series (see, for example, Watson, 1993; Diebold et al., 1998, and Wen, 1998).[5] The usefulness of spectral analysis is twofold for the purpose of this study. First, it gives an overall view of the co-movements of unemployment and

[1]See Balmaseda et al. (2000) for evidence from OECD countries.

[2]This result has been the topic of intense debate over the last few years (see references in Section 2.4).

[3]Theoretically, the relation between growth and unemployment in matching models of unemployment is either negative or positive according to the assumption of embodied or disembodied technical progress (see also Mortensen and Pissarides, 1998).

[4]These contributions take productivity growth as exogenous. Daveri and Tabellini (2000) also describe a negative correlation, but they interpret it in a endogenous growth framework where causality is from the labor market to productivity growth.

[5]Spectral analysis also supplies tools for extracting frequency components of time series such as the high-pass filter of Hodrick and Prescott (1997) or the band-pass filters of Baxter and King (1999) and Christiano and Fitzgerald (2003).